

REMARKS

Claims 1-5, 7-9, 11-16 and 18-20 have been rejected as being obvious over Bian. This rejection is respectfully traversed.

Bian discloses a seedlayer thickness of about 5 nm as the lower limit while the pending claims recite a seedlayer thickness of about 40Å as the upper limit. The Examiner's position is that about 5 nm overlaps about 40Å. During the telephone interview May 14, 2003, the undersigned suggested that the proper way to determine whether about 5 nm overlaps about 40Å is to determine what a person of ordinary skill in this art would consider the meaning of "about" would be for the sputtering process used in the industry. The Examiner agreed.

Subsequently, along with the response of June 4, 2001, the Applicants submitted Acceptance Test Procedure (ATP) for MDP-250B sputtering machine, which establishes that the thickness uniformity of a Cr film (a typical non-magnetic film) sputtered by a CM station and a RM station are less than $\pm 6\%$ and $\pm 4\%$, respectively. In light thereof, the Applicants argued that persons of ordinary skill would have recognized that "about 40Å" means up to 43Å, but not more, and "about 5 nm" means up to 47Å, but not less; thus, there is no overlap between about 5 nm of Bian and about 40Å recited in the claims. Yet, the Examiner maintained the obviousness rejection over Bian.

The Examiner's response on page 4, starting at line 5, of the Action is the following:

Applicant's argument is not persuasive for several reasons. Applicant's argument is based on a standard for a Cr layer not a N-containing Nb layer as claimed. Thus, this showing is not applicable to the presently claimed film. Even if the standard was for a layer having the claimed composition, all that it shows is the expected thickness uniformity in using that particular machine to deposit the claimed layer. It does not establish the plain meaning of "about." The Examiner maintains the position that in view of Bian's teaching of a preferred thickness range of about 5 nm or

more and the explicit disclosure that the thickness of the seedlayer is not critical, one of ordinary skill in the art would have reasonably expected "about" 50 Å to overlap with about 40 Å. Finally, Applicant's arguments do not address the Examiner's position that it would have been obvious to use a seedlayer having as small a thickness as possible in order to minimize production costs.

Let us analyze the Examiner's position step-by-step.

(1) "Applicant's argument is based on a standard for a Cr layer not a N-containing Nb layer as claimed. Thus, this showing is not applicable to the presently claimed film."

Even though Acceptance Test Procedure (ATP) for MDP-250B sputtering machine establishes that the thickness uniformity¹ of a Cr film (a typical non-magnetic film) sputtered by a CM station and a RM station are less than $\pm 6\%$ and $\pm 4\%$, respectively, the same results are equally applicable to a niobium-containing seedlayer containing nitrogen as claimed, which is also a non-magnetic film. To prove this point, Dr. Lee submits a Declaration in which the thickness uniformity for Nb films of about 125Å and 150Å are $\pm 3.2\%$ and $\pm 3\%$, respectively. Thus, the showing of thickness uniformity based a standard for a Cr layer is equally applicable for a niobium-containing seedlayer as claimed.

(2) "Even if the standard was for a layer having the claimed composition, all that it shows is the expected thickness uniformity in using that particular machine to deposit the claimed layer. It does not establish the plain meaning of 'about.'"

What is "the plain meaning of 'about'?" The Examiner has not addressed this question. In *BJ Services Company v. Halliburton Energy Services, Inc.*, Case No. 02-1496, decided August 6, 2003, the Federal Circuit agreed that "the term 'about' is intended to encompass the range of

¹ Thickness uniformity is defined as the ratio of difference of the maximum and minimum thicknesses over sum of the maximum and minimum thicknesses, i.e., $(T_{\max} - T_{\min}) / (T_{\max} + T_{\min})$.

experimental error that occurs in any measurement and that one of skill in the art would readily understand the range.”

BJ Services owns United States Patent No. 6,017,855 (“’855 patent”). Claim 5 of the ‘855 patent recites:

5. A method of fracturing a subterranean formation, comprising the steps of:
blending together an aqueous fluid and a hydratable polymer to form a base fluid, wherein the hydratable polymer is a guar polymer having carboxymethyl substituents and a C* value of about 0.06 percent by weight;
adding a crosslinking agent to the base fluid to form a gel; and
injecting the gel into at least a portion of the subterranean formation at high pressure to form fractures within the formation.

Halliburton argued that the ‘855 patent was inherently anticipated by United States Patent No. 5,697,444 to Moorhouse (“Moorhouse”), which discloses a fracturing fluid comprising one or more polymers, preferably carboxymethyl guar. Moorhouse, col. 2, ll. 45-47, and ll. 56-57. While the Moorhouse reference itself did not disclose the C* value, it was measured as 0.077. Thus, Halliburton argued that “about 0.06” includes 0.077 and this renders the ‘855 patent invalid.

In the pending case, Bian discloses “about 5 to 30 nm thick” (col. 4, line 60) while the claimed invention recites “about 40Å.” Similarly as argued by Halliburton, the Examiner in this application argues that “about 40Å” includes “about 5 nm.” Therefore, the facts of *BJ Services* and of this case are similar. Thus, the decision of the Federal Circuit in *BJ Services* should apply to the pending application.

In light of the Federal Circuit’s meaning of “about” in *BJ Services* the ordinary meaning of “about” as it relates to the claims in the pending application and to the disclosure of Bian is the *range of experimental error* that occurs in the deposition and measurement of a Nb-containing seedlayer.

In light of this ordinary meaning of “about” and Dr. Lee’s Declaration which shows that the thickness uniformity of Nb film is about $\pm 3\%$, the meanings of “about 40 Å” and “about 5 nm” are “ $40\text{Å} \pm 1.2\text{Å}$ ” and “ $50\text{Å} \pm 1.5\text{Å}$,” respectively. Thus, even by the ordinary meaning of “about 40 Å” and “about 5 nm” as determined by the standard set forth by the Federal Circuit, there is *no* overlap between “about 40 Å” and “about 5 nm.”

(3) The Examiner maintains the position that in view of Bian's teaching of a preferred thickness range of about 5 nm or more and the explicit disclosure that the thickness of the seedlayer is not critical, one of ordinary skill in the art would have reasonably expected "about" 50 Å to overlap with about 40 Å.

This argument is moot in light of the ordinary meaning of “about 40 Å” and “about 5 nm” as determined by the standard set forth by the Federal Circuit and explained above. In light of the Federal Circuit’s decision in *BJ Services* on the ordinary meaning of “about,” with all due respect, the Applicants submit that the Examiner is simply hypothecating without any evidence that “one of ordinary skill in the art would have reasonably expected "about" 50 Å to overlap with about 40 Å.” Nothing in the specification of Bian suggests the interpretation put forth by the Examiner.

Furthermore, the Examiner has admitted that Bian “disclosure[s] that the thickness of the seedlayer is not critical.” Yet, in this invention, the Applicants have shown that the seedlayer thickness is indeed important and produces unexpected results in the claimed range of the Nb-containing seedlayer thickness as shown in Figure 3 of the specification. Clearly, these unexpected results alone are sufficient to overcome the obviousness rejection over Bian that states that “the thickness of the seedlayer is not critical.”

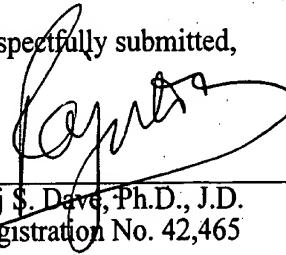
(4) Finally, Applicant's arguments do not address the Examiner's position that it would have been obvious to use a seedlayer having as small a thickness as possible in order to minimize production costs.

Again, with all due respect, the Applicants submit that the Examiner is simply hypothesizing that "it would have been obvious to use a seedlayer having as small a thickness as possible *in order to minimize production costs.*" [Emphasis added.] Persons of ordinary skill in this art recognize that the production costs depend on many factors including yield, which is an important factor. There is no correlation that the Applicants are aware of between the thicknesses of Nb-containing layers in the media versus the production costs. If the Examiner believes that such a correlation does exist, then the Applicants would like this evidence in the record in case this case goes up on appeal.

In light of this Amendment, a Notice of Allowance is respectfully solicited.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952**, referencing docket number 146712002600.

Respectfully submitted,



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